



BUSINESS IN MARYLAND

ENERGY & SUSTAINABILITY

MARYLAND
BUSINESS IN



PROFILE



Maryland's natural gas, electricity and nuclear power companies are joined by solar, wind, wave and biomass enterprises with a shared vision toward the state's "smart, green and growing" energy future. The state receives electric power via North America's largest power pool, the PJM Interconnection, and compared to surrounding states has very competitive electric prices. **Calvert Cliffs Nuclear Power Plant**, in operation since 1975, supplies all of Maryland's nuclear power and accounts for more than one-fourth of total electricity generation in the state. In 2009, Maryland's 1,300 energy and sustainability businesses generated \$10.4 billion.



WORKFORCE

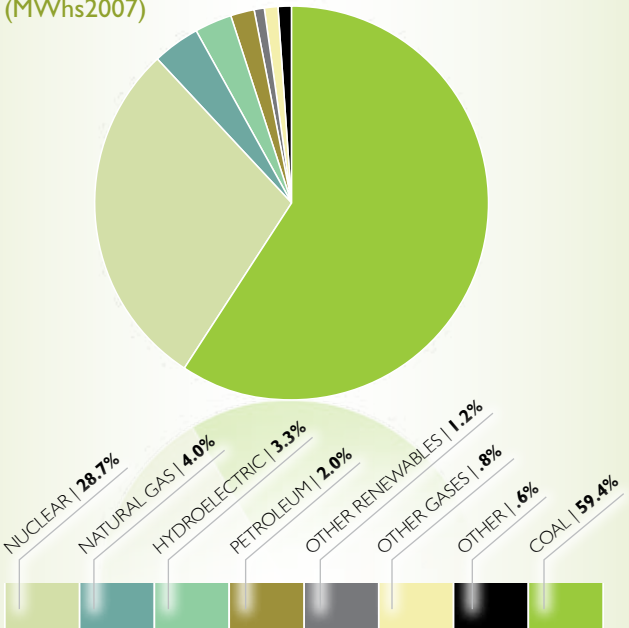
1st in concentration
of doctoral scientists
and engineers

TOP 10 ENERGY & SUSTAINABILITY EMPLOYERS

Constellation Energy Group	7,200
Washington Suburban Sanitary Commission	2,000
Potomac Electric Power	900
Southern Maryland Oil/ Wills Group	530
Waste Management of Maryland	500
W.R. Grace & Company	480
Mirant	470
Republic Services/Allied Waste	460
Southern Maryland Electric Cooperative	380
Crown Central Petroleum	300

ELECTRICITY GENERATED IN MARYLAND

(MWhs2007)



Source: Maryland PSC, Ten Year Plan (2008-2017) of Electric Companies in Maryland

MARYLAND'S WORKFORCE PIPELINE

Maryland's workforce pipeline is fueled by one of the nation's most highly skilled and diverse concentrations of professional and technical workers including scientists, nuclear technicians, and geographers. Among the states Maryland is:

- 1st in physical scientists and geographers
- 2nd in survey researchers
- 3rd in physicists, atmospheric scientists and marine engineers



ENERGY EMPLOYMENT OPPORTUNITIES

The energy and sustainability industry provides a wealth of job opportunities across a broad spectrum of occupations including science, engineering, manufacturing, installation and construction. Total employment in Maryland's green economy occupational sectors include:

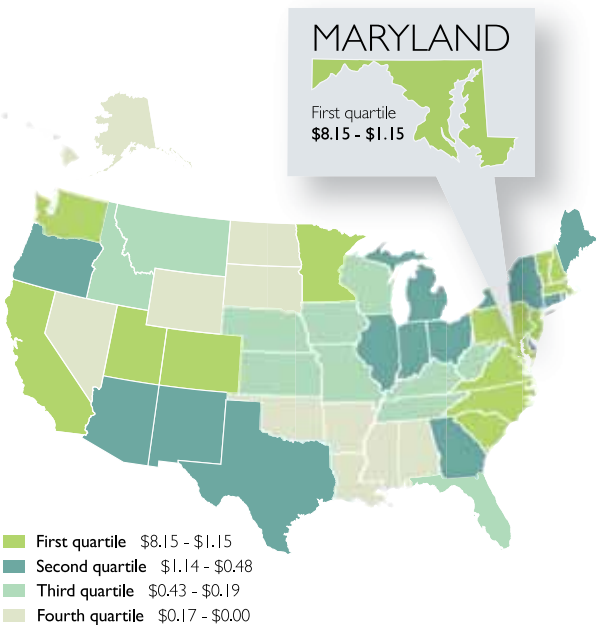
- Green Building 108,310
- Energy Production 21,890
- Energy Efficiency 96,340
- Environmental Quality 12,820
- Waste & Recycling 9,630

ENERGY GOALS

Maryland currently imports approximately 30 percent of its electrical energy from surrounding states and electricity consumption accounts for nearly half, or 46 percent, of all energy uses in the state. Securing Maryland's energy future and generating business opportunities the state's energy goals include:

- Reduce per capita electricity consumption and peak demand 15 percent by 2015
- Add 100,000 "green collar" jobs by 2015
- Reduce greenhouse gas emissions 25 percent by 2020
- Generate 20 percent of electricity from renewable energy sources by 2022

TOP 25% VENTURE CAPITAL INVESTMENT IN U.S.



Venture capital disbursed per \$1000 of Gross Domestic Product

Sources: PricewaterhouseCoopers, Venture Economics, and National Venture Capital Association, MoneyTree Survey™, special tabulations; and Bureau of Economic Analysis, Gross Domestic Product data. 2008

SELECT ENERGY INITIATIVES

- The *Generating Clean Horizons* initiative, a partnership between the state and the University of Maryland, will spur large-scale, commercial renewable energy projects. The state is offering long-term power purchase agreements to clean energy developers to place a portfolio of renewable power on the grid before 2014 and create green jobs.
- In 2009, Maryland enacted *Smart, Green, and Growing* legislation calling for a sustainable approach to development that promotes transit-oriented development, reliable local planning choices, and a clear understanding of the impact of development on our natural environment.
- *Clean Wind Energy Coalition*, a partnership between Maryland, Virginia and Delaware to develop wind farms off the mid-Atlantic Coast.
- St. Charles, Maryland, the most comprehensive smart green community development project in the U.S. is an International Model Green City and enables 40 percent of Charles County's population to live on approximately 2 percent of its land mass.

ENVIRONMENTAL INNOVATORS

Maryland is one of the top ten states attracting venture capital investments in companies in the clean energy economy. Capital support and a collaborative business environment attract innovators and entrepreneurs, prompt retrofitting of existing manufacturers and create momentum.

Astrum Solar – Headquartered in Maryland, Astrum Solar is the fastest-growing installer of residential and small commercial solar panel systems in the mid-Atlantic. The company is also one of the region's largest aggregators of Solar Renewal Energy Credits (SRECs). Astrum Solar has served hundreds of customers throughout the mid-Atlantic and is on pace to complete 500 installations in 2010.



Earth Resources Technology (ERT) – Small, woman-owned environmental related services business and one of Inc. 500's fastest growing Maryland companies with 1,355 percent 3 year revenue growth 2005-2008. ERT employs science and engineering staff including biologists, ecologists, chemists, meteorologists, physicists, civil engineers, geotechnical engineers and safety engineers to ensure the protection of environmental resources and the remediation of environmental damage from hazardous and toxic wastes.

Zymetis – Uses biofuel technology to create sustainable energy fuels for all human activity. Zymetis scientists work with *Sacchararophagus degradans*, a bacterium found in the Chesapeake Bay. The bacterium is capable of digesting almost anything containing cellulose, including materials usually headed for landfills such as sawdust, paper, and agricultural waste and converting it to sugars that can be fermented to make ethanol and other kinds of fuels.





EDUCATION

Best public school
system in the nation
2nd straight year

EDUCATION

Education and training programs in Maryland's apprenticeship training programs, community colleges' continuing education and for-credit programs, and four-year institutions and on the job-training prepare workers to meet the developing energy economy. Maryland's 16 community colleges offer programs in Weatherization and Home Energy Analysis while advanced training and degrees are available in Chemistry, Environmental Management, Environmental Engineering and Physical Sciences. University programs include:

- **Frostburg State University** - Programs on design, installation and maintenance of residential PV and wind generation systems
- **Johns Hopkins University** - Post Baccalaureate Certificate in Climate Change, Energy & Environmental Sustainability
- **University of Maryland, College Park** - Master's in Sustainable Engineering, Post Baccalaureate Certificate in Energy Resources Management and Policy



RESEARCH

The energy and sustainability industry captures a broad range of traditional industry sectors, benefitting from the state's world-renowned colleges and universities and more than 50 federal research agencies. Select research centers include:

- **Maryland Clean Energy Center** - First in the nation and supports renewable energy through development, technology commercialization, business incubation and workforce development and training.
- **University of Maryland Center for Environmental Sciences (UMCES)**
Uses science to transform the way society understands and manages the environment. With 4 locations strategically placed between the mountains and sea, UMCES research laboratories provide scientists direct access to Maryland's diverse natural ecosystems. Centers include the Appalachian Lab, the Chesapeake Biological Lab, the Horn Point Lab and the Maryland Sea Grant.
- **University of Maryland Energy Research Center**
Focuses on energy science and technology with a special focus on alternative energy generation and storage.
- **University of Maryland College Park**
 - Center for Environmental Energy Engineering
 - Center for Energetic Concepts Development
 - Harry R. Hughes Center for Agro-Ecology, Inc.
 - Institute for Research in Electronics and Applied Physics
 - Maryland Technology Enterprise Institute





DID YOU KNOW?



Maryland is one of the top ten states with the most nuclear energy jobs



Solar from Maryland's existing roof area is sufficient to generate one-fourth of the state's electricity demand



7,719 miles of shoreline create substantial potential for offshore wind and wave power



Maryland ranks third nationwide in the number of waste-to-energy plants, with nine facilities in the state



Maryland is one of fourteen states to adopt California's strict vehicle emission standards



Maryland has a 470 percent greater concentration of physical scientists than the national average



Maryland's liquefied natural gas import facility at Cove Point is one of only nine in the U.S.



Maryland gets 95 percent as much sunshine per day as Florida



INFRASTRUCTURE

Centrally located along the U.S. east coast, offering proximity to New York, Philadelphia and Washington, Maryland's robust transportation infrastructure provides immediate access to major distribution and travel routes.

- Three international airports within an hour's drive
 - Baltimore/Washington International Thurgood Marshall Airport
 - Dulles International Airport
 - Reagan National Airport
- Two Class I freight rail carriers, CSX and Norfolk Southern, and five short lines
- A deep-water, inland port that handles nearly 50 million tons of cargo annually
- Six interstate highways that link the state to every major U.S. market
- Overnight trucking access to one-third of the U.S. population



STABILITY

AAA Bond Rating
certified by Moody's, Fitch
and Standard & Poor's

INCENTIVES

Maryland has a wide array of incentives, including workforce training grants, loans and twenty-eight Enterprise Zones that provide income and real property tax credits in return for job creation and investments. Select funding, technology transfer and technical assistance programs include:

- **Cellulosic Ethanol Technology R&D Tax Credit**
Businesses that incur qualified cellulosic ethanol technology research and development expenses in Maryland may be entitled to a state income tax credit with a limit of \$250,000 for all businesses that apply.
- **Maryland Economic Adjustment Fund** - Assists business entities with modernization of manufacturing operations, development of commercial applications for technology and exploring and entering new markets. The U.S. Economic Development Administration and the State of Maryland combined to provide \$1,500,000 and \$500,000, respectively to assist small businesses.
- **Sustainable Communities Tax Credit** - Expands the Heritage Structure Rehabilitation Tax Credit Program which allows commercial property owners to receive tax credits for both exterior and interior rehabilitation work on certified heritage structures. The tax credit is equal to 20 percent of the qualified rehabilitation expenditures for the project.
- **Maryland Small Business Development Financing Authority** - Provides financing for small businesses that are not able to qualify for financing from private lending institutions or owned by socially and economically disadvantaged persons. Loan limits range from \$250 thousand to \$10 million. With a few exceptions, assistance cannot exceed 70 percent of the total project costs.

- **Maryland Industrial Partnerships (MIPS)** - Promotes the development and commercialization of products and processes through industry/university research partnerships providing matching funds to help Maryland companies pay for university research. MIPS matching funds are awarded on a competitive basis for projects based on proposals submitted jointly by Maryland companies and researchers from any of the 13 University System of Maryland institutions. The maximum MIPS award for any single project is \$100,000 per year for large and small companies and \$90,000 for start-up firms.



MARYLAND ENERGY ADMINISTRATION

Numerous financial incentives are available through the Maryland Energy Administration and state and county programs including property and sales tax incentives and state loans and grants. For detailed information about the Maryland Energy Administration go to energy.state.md.us.

- **Loans**
Commercial and Industrial Energy Efficiency Loan Fund - Low interest loans for energy efficiency improvements:
 - Up to \$500,000 for electric efficiency projects
 - Up to \$750,000 for combined electric and gas/fuel oil efficiency projects
 - Minimum \$35,000 for energy efficiency projects
- **Tax Credits**
 - Green Building Tax Credit
 - Clean Energy Production Tax Credit
 - BioHeat Tax Credit
- **State Rebate Programs**
 - Geothermal Heat Pump Grants - Up to \$10,000 to install qualified geothermal heat pumps in homes and businesses
 - Mid-Size Solar Grants - Funding of up to \$25,000 to install qualified solar energy systems in homes and commercial buildings
 - Windswept Grant Program - Assistance in offsetting a portion of the cost of small scale wind energy projects

MARYLAND DEPARTMENT OF BUSINESS & ECONOMIC DEVELOPMENT

Looking to start, expand or relocate a business? Our staff helps business owners of all sizes and sectors leverage resources, forge relationships and access industry specialists. The Department is your resource for economic, labor and license information and financial incentives.

Services include:

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- Finance programs, tax credits and training grants
- Business advocacy and consulting
- Technology transfer
- Foreign direct investment
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